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National Hydrology Research Institute
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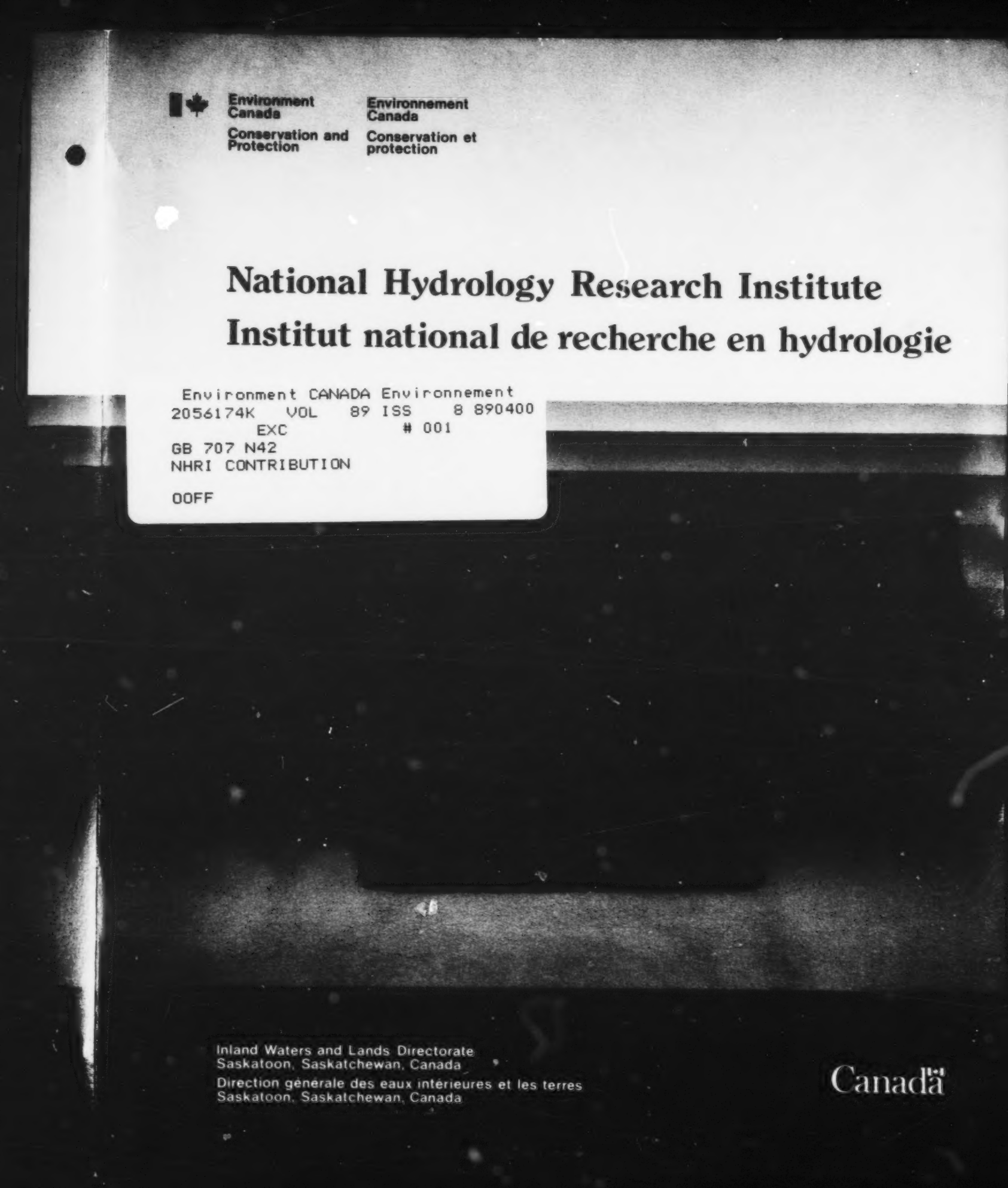

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CANADIAN ASSOCIATION OF GEOGRAPHERS 1989 DIRECTORY REPORT OF NHRC PUBLICATIONS FOR 1988 AND PROGRAMMES FOR 1989

NHRI Contribution No.89008

April, 1989

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MANAGEMENT PERSPECTIVE

Canadian geographers have long been in the forefront of environmental and water research. This report provides that community with an account of research being carried out at the National Hydrology Research Institute, the principal investigators and a listing of the major papers published during 1988. Such a transfer of information ensures that this user community is familiar with research being carried out at NHRI, facilitates the development of strategic alliances, and minimises the changes of duplication in research activities.

PERSPECTIVE DE GESTION

Les géographes canadiens sont depuis toujours les premiers intéressés par la recherche sur l'environnement et l'eau. Le présent rapport fournit à ce groupe de chercheurs un bilan des recherches effectuées à l'Institut national de recherche en hydrologie, la liste des principaux chercheurs et la liste des principales études publiées en 1988. Un tel transfert d'informations permet de s'assurer que ce groupe d'utilisateurs est au courant des recherches en cours à l'INRH, facilite l'établissement d'alliances stratégiques et minimise les risques de dédoublement des travaux de recherche.

ABSTRACT

This report lists the scientific staff of the National Hydrology Research Institute, their current research projects, and a selection of reports and papers published in 1988.

RÉSUMÉ

Le présent rapport énumère les chercheurs de l'Institut national de recherche en hydrologie, leurs travaux en cours ainsi que certains rapports et études publiés en 1988.

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Current Research / Projets de recherche en cours

Hydrological Application of Cumulative Processes (Klemes)

Recent Publications / Publications récentes

V. Klemes — Hydrological and engineering relevance of flood frequency analysis, Hydrologic Frequency Modeling, V.P. Singh (Editor), D. Reidel Publishing Company, Dordrecht, (1987), 1-18

--- — One hundred years of applied storage reservoir theory, Water Resources Management, 1(3), (1987), 159-175

--- — A hydrological perspective, Journal of Hydrology, 100(1-3), (30 July 1988), 3-28

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Current Research / Projets de recherche en cours

Acid Neutralisation in Ground-Water Flow Systems (Craig)
Ground Water in the Permafrost Environment (Craig and Kwong)
Wetland Hydrology (Craig)
Deep Well Disposal (Grove)
Ground-Water Technology Transfer (Grove)
Facility for Indoor Aquifer Testing [FIAT] (Johnston)
Acid Neutralisation in Ground-Water Flow Systems (Johnston)
Acid Mine Drainage (Kwong)
Freeze-Thaw, Soils and Ground Water (Kwong)
Ground-Water Pesticides Studies in Western Canada (McNaughton)
Organic Contamination in Ground Water (Ribo)
Landfills (Ridley)
Contaminant Transport Modelling (Vandenberg)

Recent Publications / Publications récentes

W.B. Barrie and C.H. Carr, Water use in the coal mining industry and its influence on ground water in western Canada, NHRI Paper No.38, (1988), 154 pp. + maps

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G.D. Grove — with C. Pupp, Ground water in Atlantic Canada: overview of a series of reports by Environment Canada with the assistance of provincial governments, Proceedings, International Groundwater Symposium on Hydrogeology of Cold and Temperate Climates and Hydrogeology of Mineralized Zones, C.L. Lin (Editor), (1988), 229-234

INTERA Tech. Ltd. — Feasibility study for a field sampling program to monitor impacts resulting from in situ heavy oil subsurface disposal practices, NHRI Contribution No.88001, (July 1987), 81 pp.

L.M. Johnston — Session 1. Water quality monitoring activities in the North - National Hydrology Research Institute - discussion, IWD Technical Workshop Series No.7, Inland Waters Directorate, Environment Canada, Ottawa, Ontario, (1988), 74-80

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D.C. McNaughton — Pesticides and ground water quality; a field study in western Canada, Agricultural Chemicals and the Environment, Proceedings of Meeting, Manitoba Institute of Agrologists, Brandon, Manitoba, (24 February 1988), 13 pp.

K.G. Raven — D.J. Bottomley, R.A. Sweezey, J.A. Smedley and T.J. Ruttan, Hydrogeological characterization of the East Bull Lake research area, NHRI Paper No.31, (1987), 77 pp.

---------- — and K.S. Novakovski and P.A. Lapcevic, Interpretation of field tracer tests of a single fracture using a transient solute storage model, Water Resources Research, 24(12), (December 1988), 2019-2032

A. Rouleau — A numerical simulator for flow and transport in stochastic discrete fracture networks, NHRI Paper No.39, (1988), 204 pp.

A. Vandenberg — A hybrid numerical-analytical method for the solution of partial differential equations in ground-water modelling, NHRI Paper No.36, (1987), 16 pp.

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---------- — A digital simulation of moisture movement through a layered column of sand and AFBC solid waste: preliminary report, February 1987, NHRI Contribution No.88015, (1988), 43 pp.

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S.C. Bigras, H.A.M. Chew, M.N. Demuth, S. Fogarasi, G. Holdsworth, B.C. Kenney, L. Lesack (PDF), P. Marsh, R.I. Perla, T.D. Prowse, A.C. Wankiewicz

Current Research / Projets de recherche en cours

Radiation-Ice Modelling (Chew)
Coastal Mountain Glaciers (Demuth)
Eclipse - CRR Drill Evaluation (Demuth)
River-Ice Break-Up Advance (Demuth)
Proxy Climate Data from Ice Cores (Fogarasi)
Mount Logan Ice Cores (Holdsworth)
Peyto Glacier, Alberta (Holdsworth)
Prairie Lake Hydrology (Kenney)
Suspended Sediment Transport (Kenney)
Mackenzie Delta Lakes (Lesack)
Mackenzie Delta Hydrology (Marsh)
Snowmelt Run-off in Permafrost Basins (Marsh)
Evaluation of the CRAE Model for Evaporation and Evapotranspiration (Nicholaichuk)
Herbicide and Nutrient Loss Using Low Pressure Irrigation Systems (Nicholaichuk)
Mountain Hydrology and Glacial Meltwater (Nicholaichuk)
Pesticide Transport by Spring Run-off (Nicholaichuk)
Prairie Evaporation Study (Nicholaichuk)
Snow Management and Snowmelt Infiltration (Nicholaichuk)
Hydrology of Wetlands (Nicholaichuk)
Snow Properties for Remote Sensing (Perla)
Economic Significance of River Ice Jams (Prowse)
Mechanical Strength of 0°C River Ice (Prowse)
Microwave Sensing of Snow over Tundra Environments (Prowse)
Nashvaak River Break-up (Prowse)
Snowmelt Run-Off in Permafrost Wetlands (Prowse)
Microwave Remote Sensing of Basin Storage (Wankiewicz)
Multi-Satellite Monitoring of Hydrological Processes (Wankiewicz)
Satellite Run-off Forecasting (Wankiewicz)

Recent Publications / Publications récentes

M.E. Alford and E.C. Carmack, Observations on ice cover and streamflow in the Yukon River near Whitehorse during 1983/84, NHRI Paper No.32, (1987), 63 pp.

M.E. Alford — and E.C. Carmack, Observations on ice cover and streamflow in the Yukon River near Whitehorse during 1984/85, NHRI Paper No.34, (1987), 24 pp.

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S.C. Bigras — Hydrochemical aspects of lakes and channels in the Mackenzie Delta, N.W.T., NHRI Contribution No.88019, (September 1988), 40 pp.

---------- — Lake regimes, Mackenzie Delta, N.W.T., 1985, NHRI Internal Planning Report No.88008, (1988), 44 pp.

M.N. Demuth — and G. Holdsworth and R. Brancker, Shallow ice borehole logger and deployment system, NHRI Contribution No.88018, (1988), 20 pp.

S. Fogarasi — and O. Mokievsky-Zubok, An analysis of flow data from Sentinel Creek, British Columbia: Part 1, NHRI Contribution No.87012, (December, 1987), 43 pp.

---------- — and G. Holdsworth, An investigation of large-scale upper-air flow as a means of explaining the teleconnections between long-term glacier mass balance variations on Mount Logan and long-range spatially averaged precipitation variations in the Prairie/Steppe regions of North America and Eurasia (U.S.S.R.), NHRI Contribution No.88012, (March, 1988), 31 pp.

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P.G. Landine — R.J. Granger and D.M. Gray, Evaluation of snowmelt models for application in permafrost environments, NHRI Contract Report No.88001, (31 March 1988), 54 pp.

A. Letréguilly — Relation between the mass balance of western Canadian mountain glaciers and meteorological data, Journal of Glaciology, 34(116), (1988), 11-18

P. Marsh — Soil infiltration and snow-melt run-off in the Mackenzie Delta, N.W.T., Proceedings, 5th International Conference on Permafrost, 2-5 August 1988, Trondheim, Norway, 618-622

---------- — Flow fingers and ice columns in a cold snow cover, Proceedings, 56th Annual Western Snow Conference, 18-20 April 1988, Kalispell, Montana, 105-112

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O. Mokievsky-Zubok — Glacier mass balance for 1987 on Sentinel, Helm and Place Glaciers, British Columbia, NHRI Contribution No.88009, (January 1988), 17 pp.

W. Nicholaichuk — with C.A. Campbell, F. Selles, B. McConkey, R.P. Zentner, V.O. Biederbeck and M. Schnitzer, Interaction of fertilizer N and P and snow conservation on yield of spring and winter wheat in Southwestern Saskatchewan, 1987 Annual Report, Project 22310-1580-81-51, Potash and Phosphate Institute, Agriculture Canada Research Station, Swift Current, Saskatchewan, (1987), 51 pp.

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---------- — A.J. Leyshon, Y.W. Jame and C.A. Campbell, Boron and salinity survey of irrigation projects and the absorption characteristics of some Saskatchewan soils, Canadian Journal of Soil Science, 68(1), (1987), 77-90

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W. Nicholaichuk — and F. Quinn (Editors), Proceedings of the Symposium on Interbasin Transfer of Water: Impacts and Rseaerch Needs for Canada, NHRI Symposium No.1, (1988), 502 pp.

R.I. Perla — with J. Dozier and R.E. Davis, On the objective analysis of snow microstructure, IAHS Publication No.162, (1987), 49-59

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---------- — Field determination of ice jam porosity, Proceedings, 9th International Symposium on Ice, IAHR, K. Saeki and K. Hirayama (Editors), Vol.2, (1988), 316-325

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---------- — with R.D. Moore, Snow hydrology of the Waimakariri Catchment, South Island, New Zealand, Journal of Hydrology (N.Z.), 27(1), (1988), 44-68

J. Schmok — 1988 mass-balance determination of Sentinel, Place and Helm Glaciers, British Columbia, NHRI Contract Report No.88002, (December 1988), 22 pp.

A.C. Wankiewicz — GEWEX - Global Energy and Water Cycle Experiment, Evaporation and Evapotranspiration Processes, F.J. Eley (Editor), Proceedings of Workshop, Canadian Climate Centre Report No.88-2, (1988), 94-95

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Current Research / Projets de recherche en cours

Relationship Between Food Quality and Quantity and Zooplankton Lipids Content (Arts and Evans)
River Nutrient Spiralling (M. Bothwell)
Experimental Rivers Research [EXTRA] (M. Bothwell)
Limnology of Great Slave Lake (Evans)
Paleolimnology, Paleo-climatology (Evans)
Trophic Pathways in a Hypereutrophic Prairie Lake (Evans)
The Comparative Roles of Physical Events and Zooplankton Grazers in Controlling Water Clarity in Redberry Lake (Evans)
Biogeochemistry (Jackson)
Effects of Toxic Pollutants on Microbial Communities (Jackson)
The Significance of Algal and Bacterial Production to Summer Deoxygenation in Hypereutrophic Prairie Lakes (Robarts)
Factors Controlling Phytoplankton and Bacterial Production in Oligotrophic Redberry Lake (Robarts)
Bacterial Production in Aquatic Systems - the Use of [methyl-^{3}H] thymidine and [-^{3}H] leucine for Growth Rate Measurements (Robarts)
Biological Assessment of Toxic Chemical Effects on Freshwater Ecosystems (Warwick)

Recent Publications / Publications récentes

M. Bothwell — Growth rate responses of lotic periphytic diatoms to experimental phosphorus enrichment: the influence of temperature and light, Canadian Journal of Fisheries and Aquatic Sciences, 45(2), (1988), 261-270

E.C. Carmack — R.C. Wiegand, E.M. Marles, M.E. Alford and V.A. Chamberlain, Physical limnology of an ice-covered lake with through-flow: Lake Laberge, Yukon Territory, NHRI Paper No.35, (1987), 56 pp.

M.S. Evans — Bythotrephes cederstroemi: its new appearance in Lake Michigan, Journal of Great Lakes Research, 14(2), (1988), 234-240

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T.A. Jackson — Methylation, demethylation, and bio-accumulation of mercury in lakes and reservoirs of northern Manitoba, with particular reference to effects of environmental changes caused by the Churchill-Nelson River diversion: Final report on project number 2.3 of the study of mercury in northern Manitoba carried out in accordance with the Canada-Manitoba Agreement, Technical Appendices to the Summary Report, Vol.2, Canada-Manitoba Agreement on the Study and Monitoring of Mercury in the Churchill River Diversion, Governments of Canada and Manitoba, (1987), 89 pp.

---------- The mercury problem in recently formed reservoirs of northern Manitoba (Canada): effects of impoundment and other factors on the production of methyl mercury by microorganisms in sediments, Canadian Journal of Fisheries and Aquatic Sciences, 45(1), (January 1988), 97-121

---------- Accumulation of mercury by plankton and benthic invertebrates in riverine lakes of northern Manitoba (Canada): importance of regionally and seasonally varying environmental factors, Canadian Journal of Fisheries and Aquatic Sciences, 45(10), (October 1988), 1744-1757

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R.D. Robarts and P.J. Ashton, Dissolved organic carbon and microbial activity in a hypertrophic African reservoir, Archiv für Hydrobiologie, 113(4), (1988), 519-539

---------- with R.J. Wicks, Ethanol extraction requirement for purification of protein labeled with [^{3}H] leucine in aquatic bacterial production studies, Applied and Environmental Microbiology, 54(12), (December 1988), 3191-3193

W.F. Warwick Morphological deformities in Chironomidae (Diptera) larvae as biological indicators of toxic stress, Toxic Contaminants and Ecosystem Health: a Great Lakes Focus, M.S. Evans (Editor), John Wiley and Sons, New York, (1988), 281-230

---------- and N.A. Tisdale, Morphological deformities in Chironomus, Cryptochironomus, and Procladius larvae (Diptera: Chironomidae) from two differentially stressed sites in Tobin Lake, Saskatchewan, Canadian Journal of Fisheries and Aquatic Sciences, 45(7), (1988), 1123-1144

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Current Research / Projets de recherche en cours

Glaciers and Climate Change (Ommanney)
Snow and Ice Information and Data Integration (Ommanney)

Recent Publications / Publications récentes

NHRC/CNRH	NHRC Notes/CNRH Notes, 1(1 & 2), September/Septembre, (1988), 3 pp. NHRC Notes/CNRH Notes, 1(3), 3 pp.
C.S.L. Ommanney	Glacier names of the Rocky Mountains, NHRI Contribution No.88010, (February 1988), 20 pp.
----------	1980-1985 quadrennial report to the World Glacier Monitoring Service on Canadian glacier variations, mass balance and special events, NHRI Contribution No.88014, (February 1988), 230 pp.

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Current Research / Projets de recherche en cours

Characterisation of Meterological Droughts (D. Bauer)
Paleoclimatological Data and Extended Drought Records (D. Bauer)
Prairie Drought Workshop (D. Bauer)
Irrigation Scheduling Information System (J. Eley)
Radar Hydrometeorology (J. Eley)

Satellite-Based Remote Sensing and Hydrology (G. Kite)
Applications of Distributed Hydrometeorological Models (G. Kite)
Arctic Hydrometeorology (R. Lawford)
Impacts of the 1988 Drought (R. Lawford)
Relationship Between Mid-Tropospheric Flow Patterns and Wet and Dry Months in Western and Northern Canada (R. Lawford)
Climate Variability, Change and Hydrology in British Columbia (R. Lawford)
Climate Variability and Wetlands (G. Strong)
Prairie Evaporation Study (G. Strong)
Review of Open-Water Evaporation (G. Strong)
Assessment of the Climates Generated by Global Circulation Models (L. Welsh)
Possible Impact of Climate Warming Scenarios in the Saskatchewan River Basin (L. Welsh)
USGS/CC Study of Climatic Variability and the Hydrology of the Red River basin (L. Welsh)

Recent Publications / Publications récentes

F.J. Eley — Current research needs in mountain hydrometeorology, Canadian Climate Centre Report No.87-10, (1987), 68 pp.

---------- — (Editor), Proceedings of the Workshop on Evaporation and Evapotranspiration Processes, May 20 and 21, 1987, National Hydrology Research Centre, Saskatoon, Saskatchewan, Canadian Climate Centre Report No.88-2, (1988), 108 pp.

---------- — and R.G. Lawford, Potential climatic impacts of water transfers, NHRI Symposium No.1, (1988), 319-333

G.W. Kite — Calculating streamflow from natural salinity differences, Proceedings, VIth IWRA World Congress on Water Resources, (1988), 222-231

R.G. Lawford — Climatic variability and the hydrological cycle in the Canadian North: knowns and unknowns, Proceedings, Third Meeting on Northern Climate, Canadian Climate Program, (1988), 143-162

---------- — Towards a framework for research initiatives involving the impacts of climatic variability and change on water resources in the Canadian Prairies, Symposium/Workshop Proceedings, The Impact of Climate Variability and Change on the Canadian Prairies, B.L. Magill and F. Geddes (Editors), (1988), 275-306

E.A. Ripley — Drought prediction on the Canadian Prairies, Canadian Climate Centre Report No.88-4, (1988), 137 pp.

G. Strong — The prediction of meteorological hazards using artificial intelligence, Preprints, International Symposium on Cold Region Development (ISCORD '88), Harbin, China Vol.4, (1988), 324-333

J. Whiting and E. Wheaton, The design of a western Canadian real-time system for integrated forecasting of basin specific floods and low flows, SRC Technical Report No.195, Saskatchewan Research Council, (1987), 108 pp.